SANTA BARBARA COUNTY
AIR POLLUTION CONTROL DISTRICT

Draft Staff Report for:

Rule 364
Refinery Fenceline and Community Air Monitoring

Date: February 13, 2020

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Our Mission

Our mission is to protect the people and the environment of Santa Barbara County from the effects of air pollution.

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1. EXECUTIVE SUMMARY

Petroleum refineries are among the largest stationary sources of air pollution in California. These sources process crude oil into various products such as gasoline, diesel fuel, asphalt oils, and other fuel oils. Crude oil consists of a complex mixture of hydrocarbon compounds with smaller amounts of impurities including sulfur, nitrogen, organic acids, metals, and various toxic compounds. The processing of crude oil at petroleum refineries results in emissions of criteria pollutants and toxic air contaminants. In recent years, community concern over emissions from refineries and the potential for community exposure to air contaminants, both from routine facility operations and potential releases due to upset conditions or emergency situations, has increased.

Proposed Rule 364 was developed to address the air monitoring requirements of California Assembly Bill (AB) 1647[1], which requires both a real-time fenceline air monitoring system and community air monitoring near petroleum refineries in California. Currently, the Santa Maria Asphalt Refinery is the only petroleum refinery located within Santa Barbara County. The fenceline system and community air monitoring systems would provide the public with additional air quality information about various air pollutants at the refinery and in the community.

Proposed Rule 364 requires the submittal and approval of a fenceline air monitoring plan that provides detailed information about the fenceline air monitoring system such as siting, data collection, maintenance procedures, temporary measures for equipment failures, quality assurance and auditing, and data reporting methods. Additionally, the proposed rule establishes requirements for a plan review process, notifications, and recordkeeping. The associated Rule 364 Refinery Fenceline Air Monitoring Guidelines inform the refinery operator of the elements necessary to complete a fenceline monitoring plan. These guidelines also serve as a written framework to be used by the Control Officer to evaluate and approve the fenceline monitoring plan.

The proposed rule addresses the need for the District to install and operate a refinery-related community air monitoring system. The community air monitoring station may be co-located with the District's existing monitoring equipment in Santa Maria to reduce the costs. However, based on the wind patterns in the region, the existing Santa Maria monitoring station is unlikely to adequately monitor the refinery pollutants. The District is evaluating alternative locations to move the existing monitoring equipment, and the new location could also function as a co-located community air monitoring station. Proposed Rule 364 includes cost recovery provisions to cover the costs to establish and operate a refinery-related community air monitoring system.

[1] AB 1647, Muratsuchi. Petroleum refineries: air monitoring systems; Approved October 8, 2017

2. BACKGROUND

2.1 Source Category Description

Petroleum refineries convert crude oil into a wide variety of refined products including gasoline, aviation fuel, diesel and other fuel oils, asphalt, lubricating oils, and feed stocks for the petrochemical industry. Crude oil is most often characterized by the oil's density (light to heavy) and sulfur content (sweet to sour). Crude oil consists of a mixture of hydrocarbon compounds with small amounts of impurities including sulfur, nitrogen, oxygen, and metals. Most of the petroleum refinery air emissions are associated with storage vessels, equipment leaks, loading racks, steam boilers, and process heaters. The primary pollutants emitted are reactive organic compounds arising from leakage and evaporation of the hydrocarbon materials processed and stored at the refinery. Significant amounts of sulfur oxides, hydrogen sulfide, and several species of toxic compounds are also emitted from refining operations.

2.2 Santa Maria Asphalt Refinery

The Santa Maria Asphalt Refinery was originally constructed in 1932 by the Five C Refining Company. The facility has been transferred to multiple owners throughout the decades, including Conoco, DuPont, Saba Petroleum, and Greka Energy. The current owner is California Asphalt Production, Inc.

Crude feedstock is transported into the facility by truck and pumped directly into one of four storage tanks. The feedstock is then sent to the flash and fractionator towers where it is eventually separated into naphtha, kerosene distillate, gas oil, and asphalt. The asphalt can be used for paving, mixed with gas oil, or combined with water and emulsifiers to produce emulsified asphalt. The processed materials can be stored in heated or non-heated storage tanks and transported out of the facility via loading racks or rail tank car. Heat and steam for the refinery is supplied by various process heaters and steam boilers. Most operations at the Santa Maria Asphalt Refinery result in residual tail gas vapors that are routed to and incinerated in the crude heaters or directed to a dry bed adsorbent system to control the hydrogen sulfide emissions.

2.3 Assembly Bill 1647

In recent years, community concern over emissions from refineries and the potential for community exposure to air contaminants, both from routine facility operations and potential releases due to upset conditions or emergency situations, has increased. Assembly Bill 1647 was drafted and approved by the Governor of California on October 8, 2017 to help resolve this issue. AB 1647 has four main requirements:

1) Petroleum refineries need to install, operate, and maintain a fenceline air monitoring system;
2) Air districts need to install, operate, and maintain a refinery-related community air monitoring system;
3) The real-time data from both of these systems needs to be made accessible to the public; and

4) The refineries are responsible for the costs to implement the requirements of the state mandate.

Consistent with AB 1647, Proposed Rule 364 establishes requirements for fenceline air monitoring systems and cost recovery provisions for a refinery-related community air monitoring system. The rule implements the requirements of California Health and Safety Code section 42705.6 and further protects public health by requiring petroleum refineries to collect real-time data of refinery air pollutant emissions at or near their property boundaries, and to provide data as quickly as possible to the public and to the District. These monitoring systems are also expected to help in the event of a refinery emergency. Knowing the various chemicals and their emissions levels will help emergency responders characterize the potential health effects that may occur.

2.4 Criteria Pollutants and Toxic Air Contaminants

Criteria Pollutants

Criteria pollutants are emissions for which Ambient Air Quality Standards (AAQS) have been established. The AAQS are concentration-based standards that are established to protect public health and welfare. Criteria pollutants and their precursor emissions typically refer to oxides of nitrogen (NOx), reactive organic compounds (ROCs), sulfur dioxide (SO_2), particulate matter (PM), and carbon monoxide (CO).

The refinery is subject to various air quality rules that have been adopted by the District over the years. These rules contain standards that ensure criteria pollutant emissions are effectively controlled. Such rules include District Rule 331, where the facility is required to implement a fugitive hydrocarbon inspection and maintenance program, commonly known as a Leak Detection and Repair (LDAR) program. This rule achieves approximately an 80-percent ROC reduction, as various valves and fittings can degrade over time and they are fixed during the quarterly inspections. Other rules include Rules 326 and 346 that require vapor recovery on the storage tanks and loading racks, and Rules 342 and 361 that require low-NOx burners on combustion units.

Toxic Air Contaminants

Toxic air contaminants (TACs) are emissions for which AAQS have not been established, but may result in human health risks. There are nearly 200 separate chemical compounds that have been identified as TACs by the state, which includes acetaldehyde, benzene, 1,3-butadiene, formaldehyde, and xylenes. TACs vary in their relative toxicity, and certain TACs cause health impacts at lower concentrations than other TACs. Health impacts from TACs are expressed in terms of cancer risk and noncancer (acute and chronic) hazard index.

2.5 Refinery-Related Pollutants of Concern

OEHHA has collaborated with the California Air Resources Board (CARB) and the California Environmental Protection Agency's Interagency Refinery Task Force to develop information on chemicals emitted from refineries and their health effects. The information is summarized in the report, "Analysis of Refinery Chemical Emissions and Health Effects," as it prioritizes the refinery chemicals according to their emissions levels and toxicity. The report helps support the

air districts in developing the necessary rules for implementing AB 1647. Summaries of the main refinery-related pollutants are listed below.

Reactive Organic Compounds (ROCs) & BTEX Compounds

ROCs are precursor pollutants for ozone, and they are emitted by a large number of sources throughout the county. Refineries can be a large source of fugitive ROC emissions from piping components, tanks, loading racks and other processing equipment.

BTEX compounds (referring to benzene, toluene, ethylbenzene, and xylenes) are a subset of ROCs that occurs naturally in crude oil and are associated with emissions from petroleum refineries. BTEX compounds can be emitted by incomplete combustion, fugitive emissions from petroleum storage, and motor vehicle usage. Hence, elevated levels of BTEX compounds are expected in the vicinity of refineries and major roadways. This group of ROCs is important because it is typically the largest contributor to health risk at a refinery. Measuring BTEX is critical to quickly detect and prevent excessive leaks.

Sulfur Dioxide (SO_2)

Sulfur oxides (SOx) are air pollutants that are involved in a number of chemical reactions in the atmosphere where they are transformed into acids and particulate sulfates. Heating and combusting fossil fuel releases the sulfur present in these materials and results in the formation of SOx. Since SO_2 is the most prevalent species of SOx, it is used as the monitoring pollutant indicator. SO_2 is a criteria pollutant that can have direct health impacts and can cause damage to the environment. The major sources of SO_2 at refineries are fuel fired in process heaters and boilers, Fluid Catalytic Cracking (FCC) units, Sulfur Recovery Units, and flares.

Hydrogen Sulfide (H_2S)

Hydrogen sulfide is a colorless, flammable, extremely hazardous gas with a "rotten egg" smell. It can result from the breakdown of organic matter in the absence of oxygen such as in swamps and sewers, occurs naturally in crude petroleum and natural gas, and is produced at oil refineries as a by-product of refining crude oil. Low-level concentrations can occur continuously at petroleum refineries and its measurement will help identify potential leaks at refineries and address community odor concerns.

2.6 Existing On-site Monitoring

All refineries have, to some degree, established internal monitoring systems to protect workers, emergency responders, and the surrounding public from unplanned releases. Refinery operators themselves are typically stationed at the process unit control panels and actively assessing operating conditions. The operators monitor multiple process parameters and provide alarms if preset limits are exceeded. Operators and technicians, through experience and adequate training, can detect problems early and initiate preventative action to stop them from increasing or proliferating.

Operators and technicians are typically equipped with personal air monitors that alarm when a measured concentration exceeds a preset limit. When these devices alarm, plant staff can evacuate the area and notify the operators to shut down the equipment. Personal H_2S sensors are

the most commonly used, while other sensors monitor for flammable gases, insufficient oxygen levels, and carbon monoxide. Since odor thresholds are typically lower than device detection limits, refinery personnel often can take action before a monitor alarm sounds. It is critical that all personal air monitors are properly maintained and calibrated to ensure accuracy and reliability.

The refinery fenceline and community air monitoring required by AB 1647 will provide an additional layer of information that can be used by the refinery operator, emergency response personnel, and the public to assess the potential for public exposure to pollutants from the facility.

2.7 Fenceline Air Monitoring Technology

A refinery fenceline air monitoring system requires a combination of equipment that measures and records air pollutant concentrations at or near the property boundary. Conventional air monitoring techniques rely on point source monitors that are limited to providing information about emission concentrations from a single point within a survey area. Given the lack of spatial and temporal data from point source monitors, using additional technologies can help create a more complete emission profile of the various emission sources at a refinery.

Open-path air monitoring technology is a well-established method to measure path-integrated pollutant concentrations in the atmosphere, making it ideal for long-term fenceline monitoring. Open-path technology is a type of Optical Remote Sensing (ORS) that measures air emissions along a path, typically 200 - 500 meters long. ORS instruments use a light signal to continuously detect and measure concentrations of multiple chemical compounds along the distance covered by the light signal in real-time. As a result, open-path technologies can provide greater temporal and spatial resolution as compared to conventional air monitoring techniques. Although the open-path ORS techniques have been used for over 20 years, they are constantly improving. Improvements often include changes to technologies that improve detection limits or the type of compounds detected. An in-depth review of the fenceline monitoring technologies can be found in the Rule 364 Refinery Fenceline Air Monitoring Guidelines.

3. PROPOSED RULE REQUIREMENTS – Rule 364

3.1 Overview of Proposed Requirements

Rule 364 is proposed to consist of four key components:

- Fenceline Monitoring Plan submittal by the Refinery;
- Fenceline Monitoring Plan review by the District;
- Implementation of the Fenceline Monitoring System; and
- Community Air Monitoring Station and Fees.

All of the requirements are described in further detail in their corresponding sections below.

3.2 Fenceline Monitoring Plan Submittal

A fenceline monitoring plan outlines all of the details and methods to install, operate, and maintain a fenceline monitoring system. The proposed rule requires the fenceline air monitoring plan to be submitted to the District no later than 3 months after the rule is adopted and provide the following detailed information: equipment to be used for fenceline monitoring; siting and equipment specifications; wind measurements; procedures for equipment maintenance and failures; and procedures for implementing quality assurance and quality control audits by an independent third party. The fenceline air monitoring plan shall be consistent with all of the criteria set forth in the Refinery Fenceline Air Monitoring Guidelines.

Of the various chemicals that are emitted from California refineries, 18 chemicals were found as the top candidates for air monitoring by OEHHA. Their report was based on the pollutant toxicity, average levels of emissions, and involvement in multiple refinery processes and incidences from refineries statewide. However, candidate chemicals will differ based on the processes at each specific refinery. Some top-candidate chemicals may only be released in limited amounts from individual refineries.

The Santa Maria Asphalt Refinery is a small asphalt refinery and does not have the same magnitude of emissions as the large refineries in the Bay Area and South Coast jurisdiction. The District evaluated the processes at the Santa Maria Asphalt Refinery and reduced the pollutant list to 6 main chemicals: Benzene, Toluene, Ethylbenzene, Xylene, Sulfur Dioxide, and Hydrogen Sulfide. Monitoring for these pollutants will help the refinery detect potential leaks at their facility. Furthermore, these pollutants serve as appropriate surrogates for the other potential pollutants that were identified by OEHHA. As shown in Table 1 below, Rule 364 will require all of the listed pollutants to be monitored. The release of these chemicals does not necessarily mean that local communities face substantial exposures or significant health risks. However, it does increase their likelihood of exposure, and additional air monitoring may inform decisions that could help reduce exposures.

Table 1: Pollutants for Fenceline Air Monitoring

Air Pollutants
Benzene
Toluene
Ethylbenzene
Xylene
Sulfur Dioxide
Hydrogen Sulfide

Based on the relative cost of open-path technologies as compared to conventional air monitoring techniques, District staff recommends the use of open-path air monitoring techniques for implementing a fenceline air monitoring system. Fugitive emissions can occur from gaseous or vapor leaks in pressurized process equipment (e.g., valves, pipe connections, mechanical seals, or related equipment) and from other accidental releases. Fugitive emissions can also emanate from storage tanks used to store crude oil, intermediates generated during the refining processes, and product streams. These emissions are best monitored using open-path systems given the numerous potential sources, their distribution over large areas and the challenges with immediate detection and repair of the equipment.

In accordance with the Rule 364 Guidelines, the refinery owner or operator has the option to use other air monitoring techniques and/or emerging technologies. In these instances, the refinery operator must demonstrate that the proposed alternative air monitoring technology will meet the requirements of the rule and provide adequate sensitivity and temporal and spatial coverage for the compounds being monitored. Minimum detection limits (MDLs) are listed in the guidelines for both benzene and hydrogen sulfide, and these MDLs will serve as a baseline for the acceptable sensitivity of the monitoring equipment.

3.3 Fenceline Monitoring Plan Review

After the refinery submits their fenceline monitoring plan, the Control Officer shall notify the owner or operator in writing whether their plan is approved or whether modifications are necessary. Determination of approval status shall be based on the submittal of information that satisfies the criteria set forth in the Rule 364 Guidelines.

If modifications are necessary, the owner or operator shall resubmit the fenceline air monitoring plan within 30 calendar days after notification by the Control Officer. The resubmitted plan is required to include any information necessary to address deficiencies in the plan. The Control Officer will either approve the revised and resubmitted fenceline plan or modify the plan and approve it as modified. The rule also requires the refinery to submit an updated monitoring plan to the District under certain situations, such as:

1) 45 days before the date of implementation of any planned facility, equipment, process or administrative modification that could result in changes to an approved fenceline and air monitoring plan;
2) 10 days after the date of any unplanned facility, equipment, process or administrative modification that could result in changes to an approved fenceline monitoring plan; or

3) 60 days after the date of receiving new information that an approved fenceline air monitoring plan does not adequately measure any pollutant(s) identified in Rule 364.

Failure to comply with the provisions for submitting an updated fenceline air monitoring plan outlined above will result in revocation of an approved fenceline air monitoring plan. If an approved plan is revoked, the owner or operator of a petroleum refinery would be required to submit a new fenceline air monitoring plan to the Control Officer within 30 days after revocation of the approved plan.

3.4 Implementation of the Fenceline Air Monitoring System

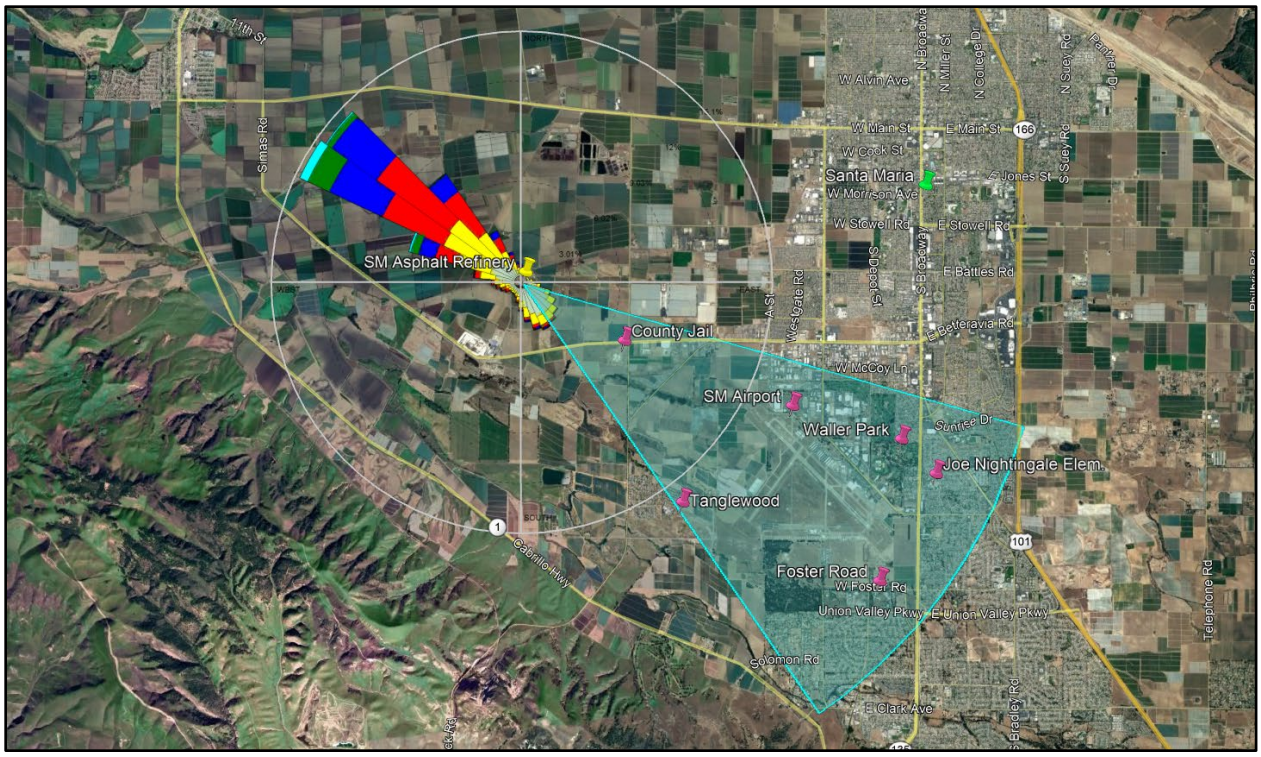
Beginning no later than 270 days after a fenceline air monitoring plan is approved by the Control Officer, the owner or operator of a petroleum refinery shall complete installation and begin operation of the real-time fenceline air monitoring system. The fenceline monitoring plan also requires the refinery to document the methods for continuous dissemination of data collected to the public as expeditiously as possible. In accordance with the Rule 364 Guidelines, fenceline air monitoring data needs to be disseminated by website displays that are user-friendly and provide context to the air monitoring information that is collected.

3.5 Community Air Monitoring Station and Fees

Per AB 1647, the District is required to install and operate a refinery-related community air monitoring system and make the pollutant data available to the public through the District's website. To help determine an appropriate location for the community air monitor, Figure 1, below, includes an overlay of a wind rose (with data from the Santa Maria Airport) at the refinery location to demonstrate the historical wind patterns for the region. The winds typically come from the northwest, so affected community members would be located to the southeast of the refinery, as shown in the light blue arc. Based on the wind data, potential locations for a community monitor include the Santa Maria Airport, Waller Park, or the county-owned buildings on Foster Road.

The District's existing monitoring station is located in central Santa Maria, and it monitors ozone, nitrogen dioxide, carbon monoxide, PM_{10}, and $PM_{2.5}$. The California Air Resources Board currently operates this monitoring station, but the District plans to assume responsibility to operate the Santa Maria monitoring station in the near future. Based on the wind patterns shown in Figure 1, the existing Santa Maria monitoring station is unlikely to adequately monitor the refinery pollutants. However, the District is evaluating alternative locations to move the existing monitoring equipment, and the new location could also function as a co-located community air monitoring station.

Figure 1: Potential Community Monitoring Locations



The co-located station needs to be able to satisfy the monitoring objectives of the Santa Maria region as well as the community that is downwind of the refinery. This means that the location needs to be representative of the larger urban area, is able to monitor potential impacts from the refinery, is suitable for a long-term lease, and has access to the necessary infrastructure. The District hopes to have a final location for a co-located community monitor chosen by the summer of 2020. Consistent with AB 1647, the initial and on-going costs for this co-located scenario would be shared between the District and the refinery in a reasonably equitable manner.

In the event that the community air monitoring station is not co-located with a District-operated monitoring station and is an independent monitoring station, then the refinery will be responsible for all costs to install and operate the independent monitoring station. See Table 2 below for a list of the estimated community air monitoring fees and their due dates. For a full listing of the estimated costs and how they were determined, please see Section 4.5, Impact to Industry.

Table 2: Estimated Community Air Monitoring Station Costs

	Co-Located	Independent	Cost Difference
Initial Capital Costs	**$253,750** [1]	**$367,500**	**$113,750** [2]
Annual Operating and Maintenance Costs [3]	**$62,900**	**$109,700**	**$46,800**

1: Due 3 months after rule adoption.
2: Upon written notification by the District, due within 60 days.
3: Invoiced annually in January.

4. IMPACTS OF THE PROPOSED RULE

4.1 Emission Impacts

Rule 364 does not set any emission standards nor does it directly reduce emissions from the petroleum refinery. However, emission benefits may be realized due to the potential for early detection of leaks and quick action to control any fugitive emissions.

4.2 Cost-Effectiveness

California Health and Safety Code section 40703 requires the District, in the process of adopting or amending a rule, to consider and make public its findings related to the cost-effectiveness of a control measure. Cost-effectiveness, for rule-making purposes, is calculated by taking the estimated compliance costs of the rule and dividing it by the amount of air pollution reduced. Estimated compliance costs for a rule can include, but are not limited to, capital equipment costs, engineering design costs, installation costs, and on-going maintenance costs, such as additional labor, fuel, or electrical costs. However, as this rule is not achieving any emission reductions, the cost-effectiveness cannot be calculated.

4.3 Incremental Cost-Effectiveness

California Health and Safety Code section 40920.6 requires the performance of an incremental cost-effectiveness analysis that identifies more than one control option that meets the emission reduction objective of the regulation. The incremental cost-effectiveness is the difference in cost between two successively more effective controls, divided by the additional emission reductions achieved. As this rule is not achieving any emission reductions, the incremental cost-effectiveness cannot be calculated.

4.4 Socioeconomic Impacts

California Health and Safety Code section 40728.5 requires Districts with populations greater than 500,000 people to consider the socioeconomic impact of any new rule if air quality or emission limits are significantly affected. In 2019, the population of Santa Barbara County was approximately 455,000 persons based on data from the Santa Barbara County Association of Governments. Using the expected growth rates for the County, the current population estimate is still below the 500,000 person threshold. Therefore, the District is not required to perform a socioeconomic impact analysis for the proposed rule.

4.5 Impact to Industry

Proposed Rule 364 will affect the owner and operator of any petroleum refinery within the County as they will be responsible for the costs to implement the AB 1647 mandate. Staff evaluated various metrics (e.g., the cost of air monitoring equipment, equipment siting, data logging systems, and labor) to estimate the costs of both the fenceline monitoring system and the community air monitoring station, as shown in Tables 3 and 4. The costs are based on the analysis performed by the South Coast Air Quality Management District and adjusted downward based on District staff assessment.

Table 3: Refinery Fenceline Monitoring System Estimated Costs

Initial Capital Costs	**$670,500**
Fenceline Monitoring Plan	**$57,500**
Air Monitoring Plan Development	$50,000
Air Monitoring Plan Review	$7,500
Monitoring Equipment	**$205,000**
OP-UVDOAS System	$150,000
H_2S Analyzer	$25,000
Met Station	$20,000
Data Logger	$10,000
Site Preparation	**$150,000**
Data Dissemination and Notification	**$258,000**
Website - Design and Development	$140,000
Mobile App and Notification Development	$118,000

Annual Operating and Maintenance Costs	**$64,400**
Fenceline System Costs	**$23,400**
Data Dissemination Costs	**$41,000**

Table 4: Community Air Monitoring Station Estimated Costs

	Co-Located	**Independent**
Initial Capital Costs	**$253,750**	**$367,500**
Monitoring Equipment	**$170,000**	**$200,000**
Auto-Gas Chromatograph (GC)	$100,000	$100,000
SOx Analyzer	$25,000	$25,000
H_2S Analyzer	$25,000	$25,000
Dilution Gas Calibrator	$20,000	$20,000
Met Station	Already own	$20,000
Data Logger	Already own	$10,000
Site Preparation	**$75,000**	**$150,000**
Air Monitoring Station Container	$25,000	$50,000
Site Preparation	$20,000	$40,000
Building Pad / Cement Slab	$15,000	$30,000
Fencing	$7,500	$15,000
Power	$7,500	$15,000
Labor: AQ Specialist (60 or 120 hours)	**$8,750**	**$17,500**

Annual Operating and Maintenance Costs	**$66,900**	**$113,700**
Site Maintenance	**$10,300**	**$20,600**
Electricity	$3,600	$7,200
Utilities	$2,700	$5,400
Land/Site Lease	$4,000	$8,000
Monitoring Equipment Maintenance	**$20,100**	**$20,100**
Calibration Gases	$6,100	$6,100
Maintenance Parts	$10,000	$10,000
Third-party Audit	$4,000	$4,000
Labor: AQ Specialist (250 or 500 hours)	**$36,500**	**$73,000**

As discussed in Section 3.5, the community monitoring fees would be assessed differently under two separate scenarios, one where the community air monitoring station is co-located with the District's monitoring station and one where the station is operated independently. Costs for the co-located system would be shared in an equitable manner, based on the burdens imposed and benefits received by the refinery. These costs are limited to the amounts necessary for compliance with Health and Safety Code section 42705.6. Based on the cost estimates, staff concludes that installing and maintaining the refinery fenceline system and reimbursing the District for the community air monitoring station will not significantly impact industry.

4.6 Impact to the District

The proposed rule is not expected to result in any significant increased workload for District staff. District staff will have to review additional monitoring plans and reports and install new monitoring equipment for the community air monitoring station. These tasks can take up to an additional 0.25 FTE (Full-Time Equivalent) workload for an Air Quality Specialist. The fees built into the rule will cover the District's increased workload. The District can manage the workload with existing staff, and no additional hires will be necessary.

5. ENVIRONMENTAL IMPACTS – CEQA

5.1 Environmental Impacts

California Public Resources Code section 21159 requires the District to perform an analysis of the reasonably foreseeable environmental impacts of the methods of compliance. The analysis shall take into account a reasonable range of environmental, economic, and technical factors, population and geographic areas, and specific sites.

The analysis must include the following information on the proposed rule:

1) *An analysis of the reasonably foreseeable environmental impacts of the methods of compliance.*

   The adoption of Rule 364 will require additional fenceline and community monitoring near a petroleum refinery. Additional monitoring will provide more information to the District and the public. The monitoring is not expected to cause any adverse environmental impacts.

2) *An analysis of the reasonably foreseeable mitigation measures.*

   Since no adverse environmental impacts are expected, no mitigation measures are proposed.

3) *An analysis of the reasonably foreseeable alternative means of compliance with the rule or regulation.*

   No alternatives means of compliance are proposed because the rule implements the legislative mandate from AB 1647.

The above analysis under Public Resource Code section 21159 further demonstrates that there is no reasonable possibility that the adoption of proposed Rule 364 will have a significant effect on the environment due to unusual circumstances.

5.2 California Environmental Quality Act (CEQA) Requirements

The California Environmental Quality Act (CEQA) requires environmental review for certain actions. This rulemaking project consists of additional monitoring requirements for a petroleum refinery and the requirement for a refinery-related community air monitoring station. The project is an action taken by the District to increase monitoring data collection and does not involve any physical changes to the environment. There will also be no relaxation of standards.

Pursuant to §15061(b)(3) of the State CEQA Guidelines, the project is not subject to CEQA as it can be seen with certainty that there is no possibility that the activity may have a significant effect on the environment. A CEQA determination will be made when the proposed rule is brought to the District Board for adoption. Any subsequent changes to the project description during the public review period will undergo additional environmental review under CEQA.

6. PUBLIC REVIEW

Rule 364 Workshop

The District held a public workshop to present, discuss, and hear comments on the draft rule on December 16 at the District office in Santa Barbara. To inform the public about the workshop, District staff e-mailed a public notice to everyone who subscribed to the noticing subscription list. Staff also mailed a hardcopy notice to the Santa Maria Asphalt Refinery. The workshop was attended by representatives and consultants for the refinery.

The draft rule was made available on the District's website and a three-week comment period followed the workshop. Written comments received during the comment period were considered and incorporated into the proposed rule, as appropriate. The written public comments that were received in response to the workshop are included as Attachment A to this report.

Community Advisory Council

To facilitate the participation of the public and the regulated community in the development of the District's regulatory program, the District created the Community Advisory Council (CAC). The CAC is composed of representatives appointed by the District's Board of Directors. Its charter is, among other things, to review proposed changes to the District's Rules and Regulations and make recommendations to the Board of Directors on these changes.

The CAC convened and discussed the proposed District Rule 364 on January 22 at the Buellton Community Recreation Center. At the meeting, staff presented the key aspects of the rule and the staff report to the CAC members. The CAC deliberated on the various aspects of the rule, such as the proposed monitoring plan, the available monitoring technologies, the data reporting, and the community air monitoring station. A motion was made to continue the discussion item at the following meeting, which was scheduled for February 26. Following the January CAC meeting, District staff prepared a summary of CAC comments and responses that will be presented at the February CAC meeting.

Public Hearing

In accordance with California Health and Safety Code section 40725, the proposed rule will be publicly noticed and made available at the District offices and on the District's website prior to the public hearing before the Board of Directors. The public will be invited to the hearing and can provide comments on the proposed rule prior to or at the hearing.

7. REFERENCES

1) South Coast Air Quality Management District – Rule 1180 (Refinery Fenceline and Community Air Monitoring Guidelines), Adopted December 1, 2017.
2) South Coast Air Quality Management District – *Staff Report for Proposed Rule 1180 (Refinery Fenceline and Community Air Monitoring)*, December 2017.
3) South Coast Air Quality Management District – Rule 1180 Refinery Fenceline Air Monitoring Plan Guidelines, December 2017.
4) Bay Area Air Quality Management District – Regulation 12, Rule 15 (Petroleum Refining Emissions Tracking), Amended December 18, 2018.
5) Bay Area Air Quality Management District – *Staff Report for Proposed Air District Regulation 12, Rule 15 (Petroleum Refining Emissions Tracking)*, April 2016.
6) Bay Area Air Quality Management District – Air Monitoring Guidelines for Petroleum Refineries, April 2016.
7) Bay Area Air Quality Management District – Regulation 12, Rule 15 (Petroleum Refining Emissions Tracking), Amended December 18, 2018.
8) San Joaquin Valley Unified Air Pollution Control District – Rule 4460 (Petroleum Refinery Fence-line Air Monitoring) and Rule 3200 (Petroleum Refinery Community Air Monitoring Fees), Adopted December 19, 2019.
9) California Air Resources Board – Refinery Emergency Air Monitoring Assessment Report, Objective 2: Evaluation of Air Monitoring Capabilities, Gaps, and Potential Enhancements, March 2019
10) Office of Environmental Health Hazard Assessment – Analysis of Refinery Chemical Emissions and Health Effects, March 2019

8. ATTACHMENTS

8.1 Attachment A. Public Comments
8.2 Attachment B. Response to Public Comments

ATTACHMENT A

Public Comments

CAP

CALIFORNIA ASPHALT PRODUCTION, INC.

January 7, 2020

Mr. Timothy Mitro
Air Quality Engineer
Santa Barbara County Air Pollution Control District
260 N San Antonio Rd, Ste A
Santa Barbara, CA 93110

SENT VIA EMAIL: MitroT@sbcapcd.org

Re: California Asphalt Production Inc.'s Comments on SBCAPCD's Refinery Fenceline & Community Air Monitoring Regulation

Dear Mr. Mitro:

California Asphalt Production Inc. ('Refinery') is pleased to provide this comment letter to the Santa Barbara County Air Pollution Control District (SBCAPCD) in regards to the Refinery Fenceline & Community Monitoring regulation (i.e. Draft Rule 364) that was presented at the SBCAPCD workshop on December 16, 2019. There are three specific areas that we would like to provide some feedback as it pertains to the Refinery, as follows:

1. Air Pollutants to be Addressed by Fenceline Air Monitoring Plans

Table 1 in the draft Rule 364 lists the criteria air pollutants, reactive organic compounds and other compounds that should be included in a facility's fenceline air monitoring plan. During the workshop, SBCAPCD recommended that the Refinery include these pollutants in their fenceline air monitoring program unless justification could be provided for excluding any of these recommended air pollutants. The Refinery has prepared an analysis to demonstrate that most of the air pollutants listed in Table 1 are not applicable to the Refinery's operations or are anticipated to be emitted in very minute quantities and therefore should be excluded from the Refinery's fenceline monitoring program (please refer to Attachment A to this letter). The Refinery is requesting that only *BTEX Compounds (Benzene, Toluene, Ethylbenzene, Xylene)* be included in their fenceline air monitoring plan. To further support our justification that the Refinery is a very small source of air pollutants, we have also prepared a comparison chart to highlight the huge disparity in air emissions between the larger refineries in the state of California and California Asphalt Production Inc. (please refer to Attachment B to this letter).

2. Implementation Schedule of the Fenceline Air Monitoring Program

During the December 16, 2019 SBCAPCD workshop, it was mentioned that the fenceline monitoring must be implemented and operational within 180 days of the fenceline monitoring plan approval. The Refinery (and its consultants) contacted Dr. Paul Roberts of Sonoma Technology, Inc. who has considerable experience in developing fenceline monitoring plans and subsequent implementation of the fenceline monitoring program. Based on his feedback, it would appear that a more reasonable timeline for implementation of the fenceline monitoring program would be one (1) year. Dr. Roberts cites several major impediments to swift implementation which are detailed in his email to the Refinery's consultant (please refer to Attachment C to this letter). Therefore, while the Refinery is committed to implementing the fenceline monitoring program as expeditiously as possible after the approval of the plan, the Refinery is requesting flexibility in the 180 days restriction.

3. Colocation with Community Air Monitoring Stations

During the December 16, 2019 SBCAPCD workshop, it was mentioned that the SBAPCD will be implementing community air monitoring stations as part of the Rule 364 implementation. The Refinery would like to propose that any community air monitoring station within the vicinity of the Refinery be collocated with the Refinery's fenceline monitoring station. This would provide additional robustness to the monitoring program and improve data integrity. Colocated monitoring stations would also be beneficial in the event that any one station has a malfunction, significant periods of data loss can be avoided.

Thank you for your time and consideration of these comments. If you have any questions or require additional information, please contact me at (805) 310-7681.

Sincerely,
GIT, Inc.

Stephen Ward
Environmental Engineer

Cc: Julio Corona (CAP)
Bart Leininger (ALG)

Enclosures

ATTACHMENT A

Pollutants To Be Monitored[1]	Refinery Emission Source[2]	Refinery Remarks
Sulfur Dioxide	Stationary combustion devices, Process Vents, Flares	Refinery has heaters and boilers combusting natural gas and refinery fuel gas. However, these emissions are not significant and the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
Nitrogen Dioxide	Stationary combustion devices, Process Vents, Flares	Refinery has heaters and boilers combusting natural gas and refinery fuel gas. However, these emissions are not significant and the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
Total ROCs	Equipment leaks, storage tanks, stationary combustion devices, Process Vents, Flares, Waste Water, Cooling Tower, Product Loading	Refinery has storage tanks and heaters and boilers combusting natural gas and refinery fuel gas. Refinery is in agreement that ROCs are emitted from the refinery. However, since the refinery is recommending that BTEX compounds (which are more specific to refinery operations) be monitored, the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
Formaldehyde	Stationary combustion devices, Process Vents, Flares	Refinery has heaters and boilers combusting natural gas and refinery fuel gas. Formaldehyde is expected from natural gas combustion. However, these emissions are not significant and the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
Acetaldehyde	Stationary combustion devices, Process Vents, Flares	Refinery has heaters and boilers combusting natural gas and refinery fuel gas. Acetaldehyde is expected from natural gas combustion. However, these emissions are not significant and the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
Acrolein	Stationary combustion devices, Process Vents, Flares	Refinery has heaters and boilers combusting natural gas and

		refinery fuel gas. However, these emissions are not significant and the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
1,3 Butadiene	Equipment leaks, storage tanks, stationary combustion devices, Process Vents, Flares, Waste Water, Cooling Tower, Product Loading	Refinery has heaters and boilers combusting natural gas and refinery fuel gas. 1,3 Butadiene is expected from natural gas combustion. However, these emissions are not significant and the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
Styrene	Equipment leaks, storage tanks, stationary combustion devices, Process Vents, Flares, Waste Water, Cooling Tower, Product Loading	Refinery has heaters and boilers combusting natural gas and refinery fuel gas. Styrene is expected from natural gas combustion. However, these emissions are not significant and the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
BTEX Compounds	Equipment leaks, storage tanks, stationary combustion devices, Process Vents, Flares, Waste Water, Cooling Tower, Product Loading	Refinery has heaters and boilers combusting natural gas and refinery fuel gas. BTEX compounds (benzene, toluene, ethylbenzene and xylenes) are expected from natural gas combustion. Refinery is in agreement that this pollutant should be included in the fenceline monitoring plan.
Hydrogen Sulfide	Sulfur recovery plant, asphalt plant, flares	The refinery does not have a sulfur recovery plant or flare but does have an asphalt plant. Therefore, it is not a significant source of hydrogen sulfide emissions and the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
Carbonyl Sulfide	Sulfur recovery plant	The refinery does not have this unit and does not expect carbonyl sulfide emissions. Therefore, the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.

ATTACHMENT A

Ammonia	Catalytic cracking unit, fluid coking unit	The refinery does not have any of these units (i.e. SCRs) and does not expect ammonia emissions. Therefore, the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
Black Carbon	Sulfur recovery plant	The refinery does not have this unit and does not expect black carbon emissions. Therefore, the refinery requests that this pollutant be *excluded* from its fenceline monitoring plan.
Hydrogen Cyanide	Stationary combustion devices, Process Vents, Flares	The main source of hydrogen cyanide emissions from a refinery is the catalytic cracking unit[3]. The refinery does not have this unit and therefore, requests that this pollutant be *excluded* from its fenceline monitoring plan.

Notes:

[1] Based on Table 1 – Air Pollution to be Addressed by Fenceline Air Monitoring Plans, Rule 364 Refinery Fenceline and Community Air Monitoring, Santa Barbara County APCD.

[2] Based on Table 1-1. Summary of Pollutants and Emission Sources Inclusion in a Petroleum Refinery's Emission Inventory, Emission Estimation Protocol for Petroleum Refineries, Version 2.1.1, May 2011, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, https://www3.epa.gov/ttnchie1/efpac/protocol/Emission_Estimation_Protocol_for_Petroleum_Refinerie_052011.pdf, accessed December 30, 2019.

[3] Based on Section 5.1.4 Methodology Rank 5B for Catalytic Cracking Units, Emission Estimation Protocol for Petroleum Refineries, Version 2.1.1, May 2011, Office of Air Quality Planning and Standards, U.S. Environmental Protection Agency, https://www3.epa.gov/ttnchie1/efpac/protocol/Emission_Estimation_Protocol_for_Petroleum_Refinerie_052011.pdf, accessed December 30, 2019.

ATTACHMENT B: Emissions by Facility
California Refinery Sector

Year	Facility	City	VOC (tons)	NOx (tons)	SOx (tons)	BTEX (lbs)
2017	Chevron Products Company - Richmond	RICHMOND	1,343	737	374	22,110
2017	Shell Oil Products US - Martinez	MARTINEZ	1,177	916	1,155	24,760
2017	Tesoro Refining - Martinez	MARTINEZ	876	360	344	27,240
2017	PBF Torrance Refinery	TORRANCE	659	924	242	30,186
2017	Chevron Products Company - El Segundo	EL SEGUNDO	530	729	282	16,090
2017	Tesoro Refining - Carson	CARSON	493	661	339	36,241
2017	Valero Refining Company	BENICIA	323	1,013	95	21,185
2017	Phillips 66 Company - Wilmington	WILMINGTON	249	471	109	8,580
2017	Phillips 66 Company - Rodeo	RODEO	248	218	368	17,649
2017	**Greka Refining Company - Santa Maria**	**SANTA MARIA**	**18**	**2**	**0**	**527**

Sources: BTEX emission data for Greka Refining Company based on California Air Resources Boards Facility Search Engine, 2017 Criteria & Toxic Plus Risk Data, Accessed 1/7/2020, https://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php?dd=

All other refinery BTEX emissions data from EPA's Toxic Release Inventory (TRI) Program, Basic Data Files, Accessed 9/10/2019, https://www.epa.gov/toxics-release-inventory-tri-program/tri-basic-data-files-calendar-years-1987-2017

Criteria pollutant emissions data from the California Air Resources Boards Facility Search Engine, 2017 Criteria & Toxic Plus Risk Data, Accessed 1/7/2020, https://www.arb.ca.gov/app/emsinv/facinfo/facinfo.php?dd=

Irra Core

From: Paul Roberts <Paul@sonomatech.com>
Sent: Thursday, December 19, 2019 7:47 PM
To: Bart Leininger
Cc: Clinton MacDonald
Subject: Re: Proposed Santa Barbara County Air Pollution Control District Fence-line Monitoring Rule
Attachments: image003.png

Follow Up Flag: Follow up
Flag Status: Flagged

Bart: Thanks for your questions.

Regarding the time to prepare a monitoring plan: 3 months should be sufficient time to prepare a monitoring plan for fenceline monitoring, once clear and complete requirements and guidance are provided by the SBCAPCD.

Regarding the time to implement fenceline monitoring after the monitoring plan is approved: Based on the fenceline monitoring we have implemented at 5 refineries in both the BAAQMD and the SCAQMD, implementation took well longer than 6 months after plan approval. Major impediments to swift implementation included the significant design and planning effort needed to install and operate monitoring safely in the refinery environment, the major delays that occurred while waiting for permit approval for infrastructure construction, and the significant effort to install the infrastructure needed to properly operate fenceline monitors. One year, or even a little more was more typical for the implementation time from plan approval.

If you have additional questions, please contact me.

Paul

Paul T. Roberts, Ph.D.
President Emeritus
Chief Scientific Officer
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From: Bart Leininger
Sent: Wednesday, December 18, 2019 11:37 AM
To: paul@sonomatech.com
Subject: Proposed Santa Barbara County Air Pollution Control District Fence-line Monitoring Rule

Paul: It was a pleasure speaking with you today. As I mentioned, the SBCAPCD is currently workshopping a fence-line monitoring rule and have included a proposed compliance timeline in the rule. The first is the preparation and submittal of a monitoring plan, which is due within 3 months of adoption. The second, is full implementation of monitoring. The draft rule proposes 6 months (180 days) from the date of plan approval to implement monitoring. I would appreciate any comments you may have on this timeline, given your experience with other refineries in the state.

Thank you.

Bart Leininger

[ALG Email Signature Block (2018)]
Bart Leininger, P.E. | Principal
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From: Bart Leininger
To: Timothy J. Mitro; Steve Ward
Subject: RE: CAP Comments to APCD Draft Rule 364
Date: Tuesday, January 7, 2020 4:10:30 PM
Attachments: image001.png

Hi Timothy: CAP was suggesting that the community monitor be collocated with the District's monitoring station. Sorry for any confusion.

Bart.

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From: Timothy J. Mitro [mailto:MitroT@sbcapcd.org]
Sent: Tuesday, January 07, 2020 4:07 PM
To: Steve Ward <sgw@greka.com>
Cc: Bart Leininger <bleininger@algcorp.com>
Subject: RE: CAP Comments to APCD Draft Rule 364

Hi Steve,

Just for clarification on your third comment:
"The Refinery would like to propose that any community air monitoring station within the vicinity of the Refinery be collocated with the **Refinery's fenceline** monitoring station."

Was this comment supposed to be promoting the community air monitoring station being co-located with the **District's** monitoring station?
Having the community station co-located with the refinery's fenceline monitoring station seems a little redundant....two separate monitoring systems measuring the same pollutants at the same location.

Timothy Mitro
Air Quality Engineer II
Santa Barbara County APCD
(805) 961-8883
OurAir.org

ATTACHMENT B

Response to Public Comments

Attachment B: Response to Public Comments

#	Summarized Comment	District Response
1	The Refinery is requesting that only BTEX Compounds (Benzene, Toluene, Ethylbenzene, Xylene) be included in their fenceline air monitoring plan. The other pollutants listed in the draft rule are anticipated to be emitted in very minute quantities and therefore should be excluded.	Based on staff analysis, the proposed rule has been tailored to focus on the main pollutants and health-risk drivers, which includes sulfur dioxide (SO_2), hydrogen sulfides (H_2S), and the BTEX compounds. Hydrogen sulfide and SO_2 are important pollutants to monitor for as they can be emitted in high amounts when the refinery processes sour crude oil or combusts field gas. The remaining pollutants have been removed from the rule due to their low emission rates.
2	The Refinery is requesting that the timeline for implementation of the fenceline monitoring program is extended from 180 days to one (1) year after rule adoption.	To account for any technical implementation issues or land-use or building permit requirements, District staff has extended the time to implement the fenceline air monitoring program from 180 days to 365 days after the date the monitoring plan is approved.
3	The Refinery would like to propose that any community air monitoring station within the vicinity of the Refinery be collocated with the District's monitoring station.	The District agrees that a co-located station would provide additional robustness to the current monitoring program while reducing the costs for the refinery and District staff time to implement community air monitoring. The District is actively searching for a monitoring location that will satisfy the monitoring objectives of the Santa Maria region as well as the community that is downwind of the refinery.